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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 22428 | 7590 | 03/02/2005 | EXAMINER | |
| | | | GREENE, DANIEL LAWSON | |
| | | ART UNIT | | PAPER NUMBER |
| | | | | 3641 |

DATE MAILED: 03/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|-----------------------|-----------------|---------------------|
| | 10/625,844 | TAKAHASHI, MUNETAKA |
| Examiner | Art Unit | |
| Daniel L Greene Jr. | 3641 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 December 2004.
2a) This action is FINAL. 2b) This action is non-final.
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-9 and 11 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-9 and 11 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date .

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ .
5) Notice of Informal Patent Application (PTO-152)
6) Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant has successfully amended the claims, specification and drawings to overcome the objections and 112 rejections of sections 1-7 of the 9/8/2004 Office Action, accordingly, those objections and 112 rejections, from sections 1-7 of the 9/8/2004 Office Action are withdrawn.

Response to Arguments

2. Applicant's arguments, see pages 9-11, filed 12/08/2004, with respect to the 102(b) rejections of Arai, Gou and Schmitt have been fully considered and are persuasive. The 102(b) rejections of Arai, Gou and Schmitt have been withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-3,7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's own admission of prior art Figures 5 and 6 in view of either the 1964 Proceedings of the Third International Conference on the**

Peaceful Uses of Atomic Energy or Small and Medium Power Reactors Vol. 1,
pages 78, and 330-333 published 1961.

Applicants own admission of prior art (APA) figures 5 and 6 disclose a reactor containment vessel (2) configured to contain a reactor pressure vessel (1) directly connected to at least one main steam pipe (4), the reactor containment vessel comprising: a first side and a second side which is opposite to the first side, the first side having an inner surface, the second side having an inner surface; a main-steam-line penetration point (8) disposed on the first side of the reactor containment vessel (1), wherein the at least one main steam pipe (4) of the boiling water reactor penetrates the reactor containment vessel at the main-steam-line penetration point (8) and a suppression pool (12) of annular shape horizontally surrounding the reactor pressure vessel (1), however prior art figures 5 and 6 do not expressly disclose that the distance between an outer surface of the reactor pressure vessel (3) and the inner surface of the first side is longer than a distance between the outer surface and the inner surface of the reactor containment vessel (1) the on a second side, i.e. that the reactor is offset in a particular direction.

As shown by Figure 3 and described (see second column, section labeled "Pressure suppression containment") in the 1964 Proceedings of the Third International Conference on the Peaceful Uses of Atomic Energy pages 362 and 363, and Small and Medium Power Reactors Vol. 1, pages 78, and 330-333 published 1961, teach it is old and well known to alter the arrangement of various components of the system for a variety of reasons.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to alter the location of the reactor pressure vessel of the system shown in APA Figures 5 and 6 to gain the advantages therefrom (i.e. increasing spatial access for maintenance on the main steam isolation valves, compact design, complete containment shielding, etc.,) as such results are in no more than the use of conventionally known maintenance practices/designs/techniques/layouts available within the art.

With regard to claim 2, "1964 Proceedings" and "Small and Medium" teach it is old and well known to vary the shapes of reactor containment vessels, it would have been obvious at the time the invention was made, to alter the shape of the APA reactor containment vessel to a non-circular horizontal cross-sectional shape in order to gain the advantages thereof (i.e. allowing the reactor containment vessel to be installed immediately adjacent to two existing oil-fired units, compact design, etc.,) as such results are in no more than the use of conventionally known shapes, designs and layouts available within the art in the rejection of corresponding parts above.

With regard to claim 3, APA figure 6 clearly shows a lower drywell (11) disposed below the reactor pressure vessel (1); and a wet well (22/14) horizontally surrounding the lower drywell; wherein the suppression pool of annular shape (22/14) is contained in the wet well.

Regarding claim 6, APA figure 6 further discloses the reactor containment vessel according to Claim 1, further comprising a feed water pipe connected to the reactor pressure vessel; and a feed-water-line penetration point; wherein the feed water pipe

penetrates the reactor containment vessel at a feed-water-line penetration point, the feed-water-line penetration point is disposed on the first side of the reactor containment vessel, and the main-steam-line penetration point and the feed- water-line penetration point are arranged in substantially a same level, wherein it is understood that the definition of substantially a same level is broad enough to include that same level shown in Figure 6 of APA since both the main-steam-line penetration point and the feed- water-line penetration point are arranged on the same floor (or level of the reactor compartment).

In regard to Claim 7, APA figure 6 further discloses a lower drywell disposed below the reactor pressure vessel; a wet well horizontally surrounding the lower drywell; wherein the suppression pool is contained in the wet well; an access tunnel (13) penetrating the suppression pool, wherein the access tunnel (13) is able to communicate between the lower drywell and the outside of the reactor containment vessel on the second side of the reactor containment vessel in the rejection of corresponding parts above.

In regard to claim 8, it would have been obvious at the time the invention was made, that rearranging the various components within the reactor containment vessel would also affect the relationships and locations of other components. As explained above, it is apparent on the face that when moving the reactor pressure vessel, the thickness of one side of the suppression pool must obviously be made smaller, while the other side is made larger, in order to maintain the total volume of said suppression pool in the rejection of corresponding parts above. Because of the geometry and

location of the larger amount of quench volume, in order to maintain the same total flow capacity of the vent pipes, it would have been obvious to bias the distribution and placement of these pipes towards the larger quench volume and thus the first side of the reactor containment vessel.

In regard to claim 9, APA figure 6 further discloses a fuel storage pool (16) disposed on the second side of the reactor containment vessel in the rejection of corresponding parts above.

In regard to claim 11, as discussed above, moving the reactor pressure vessel (with a first circular horizontal cross-sectional shape) to a location other than the geometric center of the reactor containment vessel (with a second circular horizontal cross sectional shape) for the advantages thereof (i.e. increasing spatial access for maintenance on the main steam isolation valves, compact design, complete containment shielding, etc.,) would obviously cause the reactor containment vessel's second circular horizontal cross sectional shape to eccentrically surround the first circular horizontal cross-sectional shape.

5. Page 11 of applicant's arguments filed 12/08/2004 have been fully considered but they are not persuasive; (reproduce here for applicant's convenience)

"The Office Action in the rejection over APA in view of either "1964 Proceedings" or "Small and Medium" relies on "1964 Proceedings" or "Small and Medium" for showing a reactor where the "reactor is offset in a particular direction." The "1964 Proceedings" or "Small and Medium" however, do not disclose or suggest a boiling water reactor where "the reactor pressure vessel (is) directly connected to at least one main steam pipe" and "wherein the at least one main steam pipe penetrates the reactor containment vessel".

Thus, "1964 Proceedings" or "Small and Medium", disclosing a different arrangement than a boiling water reactor with a reactor pressure vessel directly connect to a main steam pipe, do not suggest modifying the boiling water reactor of the APA to have an arrangement where the main-steam-line

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penetration point is on a first side of the reactor pressure vessel, where that first side has the offset arrangement as recited in claim 1.

Moreover, "1964 Proceedings" or "Small and Medium" do not suggest that for the reactor of the APA, it would not have been obvious to dispose the reactor pressure vessel off-center as in claim 1. The "1964 Proceedings" or "Small and Medium" do not disclose or suggest "a suppression pool of annular shape horizontally surrounding the reactor pressure vessel". The "Emergency condenser 2" on Page 78 of "Small and Medium" appears to provide some of the function of a suppression pool. With the design on page 78 with the cylindrical tank "Emergency condenser 2" disposed in a containment vessel, it would be natural to dispose the reactor pressure vessel off-center in the containment vessel. For a design with an annular suppression pool surrounding the reactor pressure vessel, however, such as the suppression pool 12 of the APA, it would not have been obvious to dispose the reactor pressure vessel off-center as in claim 1." (Underlining added)

Clearly Figure 3 on page 363 of "1964 Proceedings" with the title "Pressure suppression containment (shown with BWR)" (underlining added) and written description "Pressure suppression containment" on page 364, disclose a boiling water reactor where "the reactor pressure vessel (is) directly connected to at least one main steam pipe" and "wherein the at least one main steam pipe penetrates the reactor containment vessel". The statement "This concept is more applicable to single cycle boiling water reactors..." on Page 364 clearly discloses that the discussion on containment structures indeed is truly directed towards boiling water reactors.

The "1964 Proceedings" clearly discloses and suggests "a suppression pool of annular shape horizontally surrounding the reactor pressure vessel". Applicant is directed to Page 364 of "1964 Proceedings" last paragraph wherein it is stated "Vent pipes connect the drywell with the pool of water in the suppression chamber, an annular space surrounding the drywell". Regardless, it is applicants APA that discloses "a suppression pool of annular shape horizontally surrounding the reactor pressure vessel" and is being modified to show that it is old and well known to "suitably arrange various components" for the advantages therein.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA Figures 5 and 6 as applied to claim 1 above and further in view of U.S. Patent 3,715,270 to Jackson.

APA figures 5 and 6 as modified above disclose the invention substantially as claimed, however they do not expressly disclose a non-circular horizontal cross-sectional shape.

Jackson discloses a reactor containment vessel with a non-circular horizontal cross-sectional shape in Figures 2 and 3.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to change the shape of the reactor containment vessel of the system shown in APA Figures 5 and 6 to gain the advantages therefrom (i.e. cost reduction by reducing size and promoting compact design) as such results are in no more than a design choice of the conventionally known designs and shapes available within the art.

Note also that statements as to possible future acts or to what the reactor containment vessel may enclose are essentially method limitations or statements of intended or desired use and do not serve to patentably distinguish the claimed structure over that of the reference. See *In re Pearson*, 181 USPQ; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 152 USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

See MPEP 2114, which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed

apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647

Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than functions. *In re Dantly*, 120 USPQ 528, 531

Apparatus claims cover what a device is, not what a device does. *Hewlett-Packard Co. v Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim. In this regard the reactor containment vessel of Jackson is obviously capable of being used for a boiling water reactor, as this is no more than conventionally known uses for structures, designs and shapes available within the art.

7. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA Figures 5 and 6 as modified above and further in view of U.S. Patent 4,687,625 to Hasegawa et al. hereafter Hasegawa

APA figures 5 and 6 as previously modified above disclose the invention substantially as claimed, however they do not expressly disclose an air conditioner for the reactor containment vessel disposed outside of said reactor containment vessel.

Hasegawa teaches that it is known to have an air conditioner outside of the reactor containment vessel and the air conditioner ventilation piping (duct) to have an isolation valve in column 1 lines 22-27, column 5 lines 42+ and column 6 lines 1-6.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to locate the air conditioner for the reactor containment vessel outside of the reactor containment vessel and for the air conditioner duct to include an isolation valve to gain the advantages therefrom (i.e. minimizing costs by minimizing size of the

reactor containment vessel by moving components outside of said reactor containment vessel,) as such results are in no more than a rearrangement of parts of the conventionally known designs and locations of components available within the art.

See *In re Japikse*, 181 F.2d 1019 86 USPQ 70 (CCPA 1950) and *Ex parte Chicago Rawhide MFG. Co.*, 223 USPQ 351, 353 (Bd. Pat. App & Inter. 1985)

In regard to claim 6, Hasegawa further discloses the advantages of having the feed-water-line penetration point and the main-steam-line penetration point arranged substantially at the same level in Figures 1,2 and 6, column 3 lines 27-39, column 4 lines 21-27, column 5 lines 42+ and column 6 lines 1-6.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to locate the feed-water-line penetration point and the main-steam-line penetration point arranged substantially in the same level to gain the advantages therefrom (i.e. minimize costs by utilizing one isolating vessel for multiple penetrations) as such results are in no more than a rearrangement of parts of the conventionally known designs and locations of components available within the art. See *In re Japikse*, 181 F.2d 1019 86 USPQ 70 (CCPA 1950) and *Ex parte Chicago Rawhide MFG. Co.*, 223 USPQ 351, 353 (Bd. Pat. App & Inter. 1985)

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over APA Figures 5 and 6 as applied to claim 1 above and further in view of U.S. Patent 5,149,492 to Arai et al.

The prior art figures 5 and 6 as modified above disclose the invention substantially as claimed. However they do not expressly disclose a plurality of vent

pipes communicating the upper drywell and the wet well distributed biased to the first side of the reactor.

Arai discloses the invention substantially as claimed as well as distributing the vent pipe (8) to the first side of the reactor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to distribute the vent pipes biased towards the side with the larger volume of water to gain the advantages therefrom (i.e. maximize exposure to the largest source of cooling water) as such results are in no more than a rearrangement of parts of the conventionally known designs and locations of components available within the art.

See *In re Japikse*, 181 F.2d 1019 86 USPQ 70 (CCPA 1950) and *Ex parte Chicago Rawhide MFG. Co.*, 223 USPQ 351, 353 (Bd. Pat. App & Inter. 1985)

Conclusion

9. Examiner's Note: Examiner has cited particular columns and line numbers in the references as applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

11. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel L Greene Jr. whose telephone number is (703) 605-1210 until April 6th, 2005 at which time it will change to (571) 272-6876. The examiner can normally be reached Monday thru Friday 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J Carone can be reached on (703) 306-4198. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DIG 
February 23, 2005

MICHAEL J. CARONE
SUPERVISORY PATENT EXAMINER

